Docket No.: ZIMMERMANN-3

Appl. No.: 10/595,786

AMENDMENTS TO THE CLAIMS WITH MARKINGS TO SHOW CHANGES
MADE, AND LISTING OF ALL CLAIMS WITH PROPER IDENTIFIERS

1.-17. (Canceled)

18. (New) A device for levitating an object by sound waves, comprising:

a rigid support structure having a top surface for absorbing forces generated by gravitation or acceleration of a levitating object and

perpendicularly acting on the top surface;

a thin oscillatory element arranged in parallel to the top surface of

support structure; and

a vibration generator for causing the thin oscillatory element to vibrate

such that the oscillatory element levitates above the top surface without

contacting it and the object levitates above the thin oscillatory element as a

consequence of at least one surface portion of the object suited for levitation

and arranged in opposition to the oscillatory element.

19. (New) The device of claim 18, wherein the thin oscillatory element is a

member selected from the group consisting of metal sheet and plastic plate

having similar oscillatory properties as the metal sheet, said vibration

generator constructed to generate mechanical vibrations and coupled to the

member so that the vibrations are transferred to member.

20. (New) The device of claim 18, wherein the thin oscillatory element is an

electrostrictive-excitable piezofilm.

21. (New) The device of claim 18, wherein the thin oscillatory element is a

magnetostrictive-excitable film having magnetostrictive properties, and further

comprising a unit for magnetostrictive excitation of the film.

8

Docket No.: ZIMMERMANN-3

Appl. No.: 10/595,786

22. (New) The device of claim 18, wherein the thin oscillatory element is an electrostrictive-excitable film having electrostrictive properties, and further comprising a unit for electrostrictive excitation of the film.

- 23. (New) The device of claim 19, further comprising a mechanically fastened coupling device for coupling the vibration generator and the member.
- 24. (New) The device of claim 19, further comprising an intermediate medium for coupling the vibration generator and the member.
- 25. (New) The device of claim 24, wherein the intermediate medium is a gas.
- 26. (New) The device of claim 24, wherein the intermediate medium is a liquid.
- 27. (New) The device of claim 18, wherein the thin oscillatory element is controlled so that it vibrates with different frequencies and/or amplitudes.
- 28. (New) The device of claim 18, further comprising a plurality of said oscillatory elements which are selectively controllable.
- 29. (New) The device of claim 18, wherein the top surface of the support structure is provided with at least one suction orifice for air or gas, and the oscillatory element is provided with at least one hole, wherein suction conditions are set such that the object positioned above the hole is sucked and held at a determined distance to a surface of the thin oscillatory element by an air film generated by the vibrating oscillatory element.
- 30. (New) The device of claim 18 for transporting the object.
- 31. (New) The device of claim 18 for use in a gripping device.

Docket No.: ZIMMERMANN-3

Appl. No.: 10/595,786

32. (New) The device of claim 18 for use in a storing and holding device.

33. (New) The device of claim 18 for use in a bearing, with the support structure

constructed in the form of a tube.

34. (New) A method for levitating an object by sound waves, wherein the object

comprises at least one surface portion suited for levitation and arranged

opposite to a sound-emitting surface, said method comprising the steps of:

providing a rigid support structure having a top surface for absorbing

forces generated by gravitation or acceleration of a levitating object and

perpendicularly acting on the top surface;

providing a thin oscillatory element arranged in parallel to the top

surface of support structure; and

providing vibration generator which cause the thin oscillatory element to

vibrate so that it is levitating above the top surface of the support structure

without contacting it and the object levitates above the thin oscillatory

element without contacting it.

35. (New) A method for levitating an object by sound waves, comprising the

steps of:

placing at least one surface portion of an object suited for levitation in

opposition to a thin oscillatory element; and

causing the oscillatory element to vibrate, thereby effecting a levitation

of the oscillatory element above a top surface of a rigid support structure and

levitation of the object above the oscillatory element.

10